Blood-Stream Infection (CDC)

From: pjparks@mmm.com

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To: Blood-Stream Infection (CDC)

Subject: comments related to guidelines for the prevention of intravascular catheter related infections

Guidelines for the Prevention of Intravascular Catheter-Related Infections

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Thank you very much for moving this guideline through so rapidly, and the opportunity to respond. We would like to offer the following comments in response to the draft guideline for your consideration.

Recommendation 11 (Page 68; Lines 1473-1476)

We recommend the use of “chlorhexidine-impregnated dressing” in Recommendation 11. As it presently exists, the recommendation specifies a single product and in so doing is inconsistent with the policy of using generic terms. We wish to point out that in recommendation number 11 the committee has chosen to digress from the policy of using generic terms and are being very specific in the recommendation by uniquely describing a single product. To be in alignment with terminology used throughout the guideline a more appropriate term would be “chlorhexidine-impregnated dressing”.

We note that throughout this guideline, as in other guidelines, generic descriptors are used such as ‘transparent semi-permeable dressing’, ‘2% chlorhexidine-based preparation’, ‘sutureless securement device’, ‘needleless intravascular catheter systems’, ‘impregnated CVCs’, and so forth. With each recommendation the supporting references are listed so readers are able to go directly to the source publication to help make their own judgment regarding which specific devices to use. As a specific example, most of the research supporting the use of transparent semi-permeable dressings has been on a product developed by our company, but we do not suggest restricting the use of other ‘transparent semi-permeable dressings’ as each strives to improve upon the developments of the innovator. As a result, we view the use of the word ‘sponge’ as quite specific to a single form of technology in the development of antimicrobial-based dressings.

Additional research remains to be performed in the development and appropriate use of antimicrobial dressings and chlorhexidine-based dressings in particular. All of the studies cited were performed in conjunction with older technology starting with 1990 in the studies cited by Ho & Litton. Even as recent as the Timsit study (2009) we note that povidone-iodine was the pre-insertion preparation used. In none of the references cited were the chlorhexidine dressings evaluated in conjunction with the newest generations of 2% chlorhexidine and alcohol based pre-insertion preparations. Review of the references cited and the studies combined in Ho & Litton meta-analysis indicates that the most common agent used prior to insertion was povidone-iodine. When chlorhexidine was used, it was frequently at a concentration of 0.5%, (not 2%). The relationship of catheter related bloodstream infection to the combination of 2% chlorhexidine with isopropyl alcohol used in conjunction with chlorhexidine

containing dressings remains unresolved.

To reiterate, we strongly suggest that the committee reconsider the use of the broader term chlorhexidine-impregnated dressing. Specific citations follow.

Respectfully Submitted,

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Patrick J. Parks, MD, PhD

Recommendation:
Page 68; Lines 1473-1476
11. Use a chlorhexidine-impregnated sponge dressing for temporary short-term catheters in patients older than 2 months of age, if the CRBSI rate is higher than the institutional goal, despite adherence to basic CRBSI prevention measures, including education and training, use of chlorhexidine for skin antisepsis, and MSB [22, 156-158]. Category 1B

Catheter site dressing regimens

Page 21-23; Lines 483-536

11. Use a chlorhexidine-impregnated sponge dressing for temporary short-term catheters in patients older than 2 months of age, if the CRBSI rate is higher than the institutional goal, despite adherence to basic CRBSI prevention measures, including education and training, use of chlorhexidine for skin antisepsis, and MSB [22, 156-158]. Category 1B

Background
Transparent, semi-permeable polyurethane dressings permit continuous visual inspection of the catheter site and require less frequent changes than do standard gauze and tape dressings.
In the largest controlled trial of dressing regimens on peripheral catheters, the infectious morbidity associated with the use of transparent dressings on approximately 2,000 peripheral catheters was examined [126]. Data from this study suggest that the rate of colonization among catheters dressed with transparent dressings (5.7%) is comparable to that of those dressed with gauze (4.6%) and that no clinically substantial differences exist in either the incidences of catheter site colonization or phlebitis. Furthermore, these data suggest that transparent dressings can be safely left on peripheral venous catheters for the duration of catheter insertion without increasing the risk for thrombophlebitis [126].

A meta-analysis has assessed studies that compared the risk for CRBSIs for groups using transparent dressings versus groups using gauze dressing [159]. The risk for CRBSIs did not differ between the groups. The choice of dressing can be a matter of preference. If blood is oozing from the catheter insertion site, gauze dressing is preferred. Another systemic review of randomized controlled trials comparing gauze and tape to transparent dressings found no significant differences in CRBSIs, catheter tip colonization, or skin colonization between dressing types [160].
Chlorhexidine impregnated dressings have been used to reduce the risk of CRBSI. In the largest multicenter randomized controlled trial published to date comparing chlorhexidine impregnated sponge dressings vs standard dressings in ICU patients, rates of CRIs were reduced even when background rates of infection were low. In this study, 1636 patients (3778 catheters, 28 931 catheter-days) were evaluated. The chlorhexidine-impregnated dressings decreased the rates of major CRIs (10/1953 [0.5%], 0.6 per 1000 catheter-days vs 19/1825 [1.1%], 1.4

per 1000 catheter-days; hazard ratio [HR], 0.39 [95% confidence interval {CI}, 0.17-0.93]; *P* = .03) and CRBSIs (6/1953 catheters, 0.40
vs 17/1825 catheters, 1.3 per 1000 catheter-days; HR, 0.24 [95% CI, 0.09-0.65]) [156]. A randomized controlled study of 140 children used polyurethane or a chlorhexidine impregnated dressing showed no statistical difference in BSIs; however, the chlorhexidine group had lower rates of CVC colonization [158]. In 601 cancer patients receiving chemotherapy, the incidence of CRBSI was reduced in patients receiving the chlorhexidine sponge dressing compared to standard dressings (p=0.016, relative risk 0.54; confidence interval 0.31-0.94) [161]. A meta-analysis that included eight randomized controlled trials demonstrated that chlorhexidine impregnated sponges are associated with a reduction of vascular and epidural catheter exit site colonization (14.8% versus 26.9%, OR 0.47, 95% CI: 0.34 to 0.65) (overall 14.3% versus 27.2%, OR 0.40, 95% CI: 0.26–0.61; P < 0.0001), but no significant reduction in CRBSI (2.2% versus 3.8%, OR 0.58, 95% CI: 0.29–1.14, P = 0.11) [157]. per 1000 catheter-days
Although data regarding the use of a chlorhexidine impregnated sponge in children are limited, one randomized, controlled study involving 705 neonates reported a substantial decrease in colonized catheters in infants in the chlorhexidine sponge group compared with the group that had standard dressings (15% versus 24%; RR = 0.6; 95% CI = 0.5--0.9), but no difference in the rates of CRBSI or BSI without a source. Chlorhexidine impregnated sponges were associated with localized contact dermatitis in infants of very low birth weight. In 98 neonates with very low birth weight, 15 (15%) developed localized contact dermatitis; four (1.5%) of 237 neonates weighing >1,000 g developed this reaction (p < 0.0001). Infants with gestational age <26 weeks who had CVCs placed at age <8 days were at increased risk for having localized contact dermatitis, whereas no infants in the control group developed this local reaction [22].